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# ANALYSIS





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# THE SEMANTIC DEFINITION OF TRUTH

*By* MAX BLACK

## 1. INTRODUCTION

I was led to write this paper by a suspicion that others, too, had found it hard to understand the significance of the so-called " semantic " definition of truth constructed by Professor Alfred Tarski.[1] Part of the trouble is due to the fact that Tarski defines the term ' true in $L$ ', where $L$ is one of a number of *artificial* languages of relatively simple structure. His definition is complex. But when its technicalities have been mastered, one is left wondering how far the definition could be adapted to " ordinary " English or any other " natural " language. And one may wonder how far the results illuminate the " *philosophical* problem of truth ".[2]

I shall try to describe, as simply as possible, the distinctive features of Tarski's procedure. Then I shall consider what modifications are needed if a similar definition of truth is to be framed for a *natural* language (" ordinary English ") and I will end with some critical remarks about the philosophical significance of the semantic definition.

## 2. THE NEED FOR SEMANTICAL TYPES

One feature of Tarski's procedure which we must be careful to imitate is a rigorous observance of the distinction between an

[1] The basic source is Tarski's famous essay, " Der Wahrheitsbegriff in den formalisierten Sprachen ", *Studia Philosophica*, vol. 1, 261–405 (Lwów, 1935). This is a German translation of a Polish work published in 1933. A more popular outline, containing replies to criticism, is the same author's " The semantic conception of truth ", *Philosophy and Phenomenological Research*, vol. 4 (1944), 341–375. I shall refer to these works as *WFS* and *SCT*, respectively.

[2] Tarski himself claims *philosophical* significance for his work : " Its central problem—construction of a definition of a true statement (*Aussage*) and establishment of the scientific foundations of the theory of truth—belongs to the domain of theory of knowledge, and is even reckoned as one of the main problems of this branch of philosophy. So I hope that this work will interest epistemologists (*Erkenntnistheoretiker*) and that they will be in a position to analyze critically the results contained therein, and use them for further research in this field . . . " (*WFS*, 392, translated).

Cf. also *SCT*, 342–3, where Tarski's definition is represented as a refined version of the " classical Aristotelian conception of truth " and the " correspondence theory ".

" object- " and a " meta- " language. The need for this, or an equivalent, is easily shown by an argument making use of the following figure :

| |
|---|
| The statement printed within a rectangle on this page is false. |

To save tiresome verbiage, let '$c$' be agreed to be an abbreviation for the words, 'The statement printed within a rectangle on this page'. If the reader will consider the meaning of '$c$' and then *examine this page*, he should be led to accept :

(1) $c$ is identical with the statement '$c$ is false'.

On the other hand, it seems hardly possible to deny :

(2) '$c$ is false' is true if and only if $c$ is false.

From (1) and (2) there follows[3] :

(3) $c$ is true if and only if $c$ is false.

which is a self-contradiction. From an empirical truth, (1), and a statement apparently true by definition, (2), a contradiction has been deduced.[4]

This paradox arises through ambiguous use of the term 'statement' and may be resolved by introducing an appropriate distinction. If statements containing the term 'true' or 'false' are systematically labelled " secondary ", to distinguish them from the "*primary*" statements, from which those terms are absent, no paradox will arise. For the rectangle on this page must now be supposed to contain the words, 'The *primary* statement printed within a rectangle on this page is false', which themselves constitute a *secondary* statement, say $s$. Since no primary statement is in fact printed within the rectangle, it is easily seen that $s$ is false,[5] but not self-contradictory.

Similar puzzles can be constructed by using such " semantic " terms as 'designates' or 'name of'. A general distinction between object- and meta-language will prevent any of them from occurring. A further precaution is an injunction against

[3] (2) has the form $k$ is true $\equiv l$; (1) has the form $m = k$; substitution of $m$ for $k$ in (2) yields (3).

[4] This version of the Epimenides paradox is attributed to J. Lukasiewicz (cf. *WFS*, 270).

[5] Assuming Russell's analysis of the definite description, " *the* so-and-so ".

the admission of such semantic words as primitive or undefined terms ; it is a major task of semantics, in Tarski's programme, to provide clear *definitions* of these suspects.

How this is to be done in the case of 'truth', I shall soon illustrate by means of an example (section 4 below).

### 3. The central idea of Tarski's method

The ideas which guide Tarski's search for a semantic definition of truth are deceptively simple : (i) He decides to interpret 'true' as a predicate of object-language *sentences* (so that a sentence of the form '*s* is true' belongs to the *meta*-language). (ii) He tries to construct a definition of 'true' of which the following will be consequences :

'Today is Monday' is true $\equiv$ Today is Monday,[6]

'London is a city' is true $\equiv$ London is a city,

'Tom loves Mary' is true $\equiv$ Tom loves Mary,

AND SO ON.

The enumeration of instances is deliberate ; for it is impossible to give an adequate formal translation of the words 'AND SO ON'. In order to see the point of Tarski's work, it is essential to understand why this is so.

The natural way to generalise the condition (ii) above would be to say :

($\Theta$) For all $x$, if $x$ is a sentence, then '$x$' is true $\equiv x$.

But this formula is easily seen to be nonsensical. According to the usual conventions for quotation marks, the symbol occurring immediately after the word 'then' (in $\Theta$) refers to *a constant, not a variable*. In fact, '$x$' is the twenty-fourth *letter* of the alphabet, and not even a sentence. Thus to say "'$x$' is true" is as nonsensical as to say "Tom is true".[7]

We might try to replace $\Theta$ by some such formula as:

For all $x$ and $y$, if $x$ is a sentence and $y$ uniquely designates $x$, then $y$ is true $\equiv x$.

[6] Here '$\equiv$' is the sign of logical equivalence, synonymous with 'if and only if'.

[7] For reasons against interpreting "'$x$'" as the name of a variable sentence, see *WFS*, 274–6.

But this does not belong to the *meta*-language, in which we wish the definition of 'true' to be formulated: it is a sentence of the *meta-meta*-language.[8] And the undefined semantic term, 'uniquely designates', is no less problematic then the term 'truth' which is to be defined.

In default of a *simple* definition expressing the intent of condition (ii) above, the best we can do is to write a *schema*:

(S) $s$ is true $\equiv x$.

We may say, informally and inexactly, that an acceptable definition of 'true' must be such that every sentence obtained from **S** by replacing '$x$' by an object-sentence and '$s$' by a name or definite description of that object-sentence shall be true. But we must remember that to talk in this way is equivalent to paraphrasing the unacceptable formula $\Theta$. At all events, **S** is *not* a definition of truth, but at best a criterion to guide us in the search for a definition.[9]

As the simplified language now to be described will illustrate, Tarski's definition of truth has quite a different form from that of the schema, **S**.

## 4. An illustrative model[10]

We suppose our object-language, **L**, to contain the following vocabulary:

'a' 'b' 'r' 's' '$p$' '$n$'

The first four of these symbols are to be understood as respectively synonymous with 'the Amazon', 'the Baltic', 'is a river', and 'is a sea'; '$p$' is the sign of a logical product, '$n$' the sign of negation.

As illustrations of *sentences* of **L** we take 'ra', '*n*sb', and '*np*rasb'. These mean the same as 'the Amazon is a river', 'the Baltic is not a sea', and 'it is not the case that the Amazon is a river and also the Baltic is a sea'.

[8] It refers to "primary" and "secondary" terms, and must itself, therefore, contain *tertiary* terms.

[9] This point, made emphatically in both *WFS* and *SCT*, has been overlooked by many critics. Wrongly assuming S or some equivalent to be the proposed definition, they remain understandably puzzled by the pointlessness of the further manoeuvres.

[10] Another helpful model may be found on p. 154 of M. Kokoszynká's illuminating paper, "Über den absoluten Wahrheitsbegriff und einige andere semantische Begriffe", *Erkenntnis*, vol. 6 (1936), 143–165.

The meta-language, **M**, in which we talk about signs belonging to **L**, includes (i) all signs belonging to **L**, (ii) the signs ' A ', ' B ', ' R ', ' S ', ' *P* ', ' *N* ', which are names for ' a ', ' b ', ' r ', ' s ', ' *p* ', ' *n* ', respectively, (iii) a convention stipulating that ' RA ' shall be a name for ' ra ', ' *N*RA ' a name for ' *n*ra ', and so on,[11] (iv) the usual symbols of the logical operations, ' $\sim$ ', ' $\vee$ ', ' $(x)$ ', ' $=$ ', etc.

The definition of ' true in **L** ' proceeds in two stages. First we define ' sentence in **L** ' or, as we shall say for short—' Sentence ' (a term belonging to **M**, of course).

Using English, rather than **M**, as our meta-language, we can say informally that a sign, u, (belonging to **L**) is a Sentence if and only if one of the following three conditions is satisfied :

(i) u is ' ra ' or ' rb ' or ' sa ' or ' sb ',

(ii) u is a sign composed of a Sentence preceded by ' *n* ',

(iii) u is a sign composed of a Sentence preceded by a Sentence preceded by ' *p* '.

The formal definition, expressed in **M**, will be :

$$\begin{aligned} & \mathrm{u} \in \mathrm{Sentence} =_{\mathrm{Df}} \\ & \quad \{ [(\mathrm{u} = \mathrm{RA}) \vee (\mathrm{u} = \mathrm{RB}) \vee (\mathrm{u} = \mathrm{SA}) \vee (\mathrm{u} = \mathrm{SB})] \\ & \quad \vee [(\exists \mathrm{v})(\mathrm{v} \in \mathrm{Sentence} \,.\, \mathrm{u} = N\mathrm{v})] \\ & \quad \vee [(\exists \mathrm{v})(\exists \mathrm{w})(\mathrm{v} \in \mathrm{Sentence} \,.\, \mathrm{w} \in \mathrm{Sentence} \,.\, \mathrm{u} = P\mathrm{vw})] \}. \end{aligned}$$

This is a " recursive " definition : it supplies us with a means of deciding in a finite number of steps whether any given formula belonging to **L** is or is not a sentence.[12]

Now we supply a definition of ' true in **L** '. Informally, using English again as a meta-language, we may say that a sign, u, (belonging to **L**) is True provided that u is a Sentence (as previously defined) and, in addition, one of the following three conditions is satisfied :

(i) (u is ' ra ' and ra is the case) or (u is ' rb ' and rb is the case) or (u is ' sa ' and sa is the case) or (u is ' sb ' and sb is the case),

(ii) u has the form ' *n*v ' and v is *not* True,

(iii) u has the form ' *p*vw ' and both v and w are True.

[11] In a formal presentation, this vague description would have to be replaced by formal rules for the " concatenation " of symbols belonging to **M**.

[12] Thus suppose the formula is *P*RA*N*RB. Clause (iii), or its formal equivalent, reduces the question whether this is a Sentence to the question whether both RA and *N*RB are Sentences. Clause (i) shows RA to be a Sentence, while clause (ii) shows *N*RB to be a Sentence if RB is one, which clause (i) again guarantees. Thus *P*RA*N*RB *is* a Sentence.

The formal definition, expressed in **M**, is:

$$
\begin{aligned}
&u \in \text{True} =_{\text{Df}} \\
&\quad (u \in \text{Sentence}) \ \& \\
&\{ [(u = RA \,.\, ra) \vee (u = RB \,.\, rb) \vee (u = SA \,.\, sa) \vee (u = SB \,.\, sb) \\
&\vee [(\exists v)(u = Nv \,.\, \sim(v \in \text{True})) \\
&\vee [(\exists v)(\exists w)(u = Pvw \,.\, v \in \text{True} \,.\, w \in \text{True})]\}.
\end{aligned}
$$

Even in this highly simplified model, the definition of 'true' has a formidable appearance. Yet its central notion is easy enough to grasp. Our object-language, **L**, has an infinity of sentences belonging to it, all of which, however, are constructed in a particularly simple fashion out of the four simplest sentences, RA, RB, SA, and SB, either by prefixing *N* to a given sentence, or by prefixing *P* to the combination of two given sentences. In the case of the simplest sentences, 'RA $\in$ True' is defined to be equivalent to 'ra' ('The Amazon is a river' is true if and only if the Amazon is a river) and similarly for the other three simplest cases; while the more complex cases are reducible to the simpler ones, by means of the recursive definition provided.

An example may help to make this clearer. We wish to determine whether *P*RA*N*RB is true. We already know *P*RA*N*RB to be a sentence (see footnote 12). The third clause of the definition requires us to determine whether *both* RA and *N*RB are true. According to the first clause, RA is true if and only if ra; and according to the second and first clauses, *N*RB is true if and only if $\sim$rb. Now our *geographical knowledge* entitles us to affirm both 'ra' and '*n*rb' (the Amazon *is* a river and the Baltic is *not* a river). Thus we may affirm that *P*RA*N*RB is true.

In all cases the procedure will be similar. A given complex sentence of L will either have the form '*n* (. . .)' or the form '*p* (. . .) (- - -)'. If the first, we shall need to inquire whether '(. . .)' is *not* true; if the second, whether *both* '(. . .)' and '(- - -)' are true. In either case the problem has been reduced to that of the truth of simpler sentences.

It will be noticed that '*P*RA*N*RB' is the name of the sentence, '*p*ra*n*rb'; and that the criterion of the truth of *P*RA*N*RB is explicitly expressed by '*p*ra*n*rb'. A similar situation will arise in general, *though we are not allowed to say so*. We can "see" that the test of the assertion "*N*RB is true" is expressed by '*n*rb'; the test of "*P*SASB is true" is expressed by '*p*sasb'; and so

on.[13] But every attempt to *say* this leads back to the illegitimate formula, Θ, rejected in section 3 above.

It is not hard to see the relation between our definition of 'true in **L**', and the schema (**S**) of page 52 above. The *technical* interest of the definition arises from its success in, as it were, generalizing the particular instances of this schema. And we can now see how this was done. In place of the futile attempt to treat "'$x$'" in

$$`x\text{' is true} \equiv x$$

as a variable, we achieved the desired end by *enumerating* the criteria in the simplest cases, to which all the more complex cases were made reducible.

## 5. Technical applications of Tarski's definition

The model I have used differs from the simplest case discussed by Tarski in the following respects. His simplest object-language contains an infinite number of variables (where **L** contains none), no individual constants (where **L** contains 'a' and 'b'), no predicates with a single argument (while **L** contains 'r' and 's'), a single two-termed relation of inclusion (none in **L**) and a universal quantifier (none in **L**). Whereas **L** consists only of trivial combinations of four trivial statements, Tarski's first object-language is already sufficiently "rich" to express a general theory of class relationships.[14]

To those interested in the formal aspect of such studies, the most interesting of Tarski's results concern the conditions in which a definition of truth of the type he desires (*i.e.* conforming to schema **S** above) is possible. It appears that the meta-language used must be "essentially richer" than the object language (*i.e.* roughly speaking, must contain variables of higher logical types). And if this condition cannot be fulfilled (as in the common cases where the object language contains an infinity of logical types), an *explicit* definition of truth in the meta-language becomes impossible.[15]

[13] In our special case, we might even formulate a maximum of procedure: To test a statement of the form '. . . is true' where '. . .' is wholly composed of capital letters, test the statement '- - -', derived from '. . .' by substituting the corresponding small letters. This maxim, however, is subject to the criticisms explained in section 3. If we formulate the maxim explicitly, we get a statement similar to **Θ** or **S**.

[14] This higher complexity of the object-language calls for the use of ingenious special devices in order to formulate a recursive definition of truth. Thus Tarski first defines the notion of "satisfaction" of a sentential *function*, reaching the definition of truth of a sentence only indirectly. For the definition, see *WFS*, 303–316; for an explanation of the need of the detour, see *SCT*, 363.

[15] The best we can then do is to introduce 'true' as an undefined term by means of axioms.

An important by-product of Tarski's work is a method for demonstrating the undecidability of certain propositions in " sufficiently rich " deductive systems.[16]

The technical interest of Tarski's work, however, is independent of its philosophical significance. Indeed it seems to me that if he had replaced ' true ', throughout his formal studies, by 'T', 'X', or another arbitrarily chosen symbol, his important results regarding the consistency and completeness of deductive systems would have followed just as well. The question of the adequacy of his work as " philosophical reconstruction " of the pre-analytical notion of truth is quite distinct from that of the value of his contributions to the exact study of formal deductive systems.

## 6. Can Tarski's procedure be applied to " ordinary language "?

Tarski's definitions of truth are formulated in connection with " artificial languages ", *i.e.* generalized deductive systems of varying degrees of formal complexity. The philosophical relevance of his work will depend upon the extent to which something similar can be done for colloquial English (E say).

Bearing in mind the presence in E of the semantic paradoxes discussed in section 2 above, we must expect certain modifications to be made in E. The most important of these will be the rigorous enforcement of the object-language/meta-language distinction and the introduction of suitable typographic devices to distinguish terms belonging to the object-language ($\mathbf{L}_E$, say) from those belonging to the meta-language ($\mathbf{M}_E$, say). Equally obvious, in the light of our earlier discussion, will be the demand that the formation and transformation rules of $\mathbf{L}_E$ (rules of syntax and logical deduction) be completely formalized; and that all semantic terms such as ' true ', ' false ', ' expressing ', ' name ', and their cognates be deleted from $\mathbf{M}_E$ (though they may be re-introduced *by definitions*). More important for our purpose are the following requirements :

(i) All the terms defined in E must be supposed replaced by their definitions, and *a complete inventory of the undefined terms of* $\mathbf{L}_E$ *must be available.*

[16] This provides a method of investigating the " completeness " of deductive systems, alternative to the well known methods used in proving Gödel's Theorem. Cf. A. Tarski, " On undecidable statements in enlarged systems of logic and the concepts of truth ", *The Journal of Symbolic Logic*, vol. 4 (1939), 105–112.

(ii) Every undefined term in $\mathbf{L}_E$ must have a distinctive name in $\mathbf{M}_E$[17] and *a complete inventory of such names must be available.*

With the exception of those I have called (i) and (ii), the above conditions express obvious modifications required in *any* exact treatment of an admittedly inexact vernacular. If *all* of them could be satisfied (which there is no reason to doubt except in the case of (i) and (ii)) there would be no difficulty in principle[18] in applying Tarski's procedure, appropriately modified. As in the case of our simplified model (section 4) we should first need to *enumerate* defining conditions for *every* sentence of the form '( . . .) is true', where (' . . .)' is replaced by the name of a *primitive sentence* in $\mathbf{L}_E$ (*i.e.* one containing no logical signs). And then we would have to formulate a recursive definition of 'true in $\mathbf{L}_E$' of a kind reducing the test of '(- - -) is true', where '(- - -)' is replaced by the name of a *complex* sentence of $\mathbf{L}_E$, to the test of simpler cases.

The technical difficulties in completing this programme are of no importance here. It is the first steps—the exhaustive enumeration and designation of the primitive signs of $\mathbf{L}_E$ (conditions (i) and (ii) above) that need careful scrutiny. For the consequences are highly paradoxical. If a single proper name, say 'Calvin Coolidge', were omitted from our inventory, the notion of truth would not have been defined for sentences in which that name occurred. Of the sentence 'Calvin Coolidge was a president of the United States' we could neither say that it was true, nor that it was untrue. The proper comment would be that since no reference to the name 'Calvin Coolidge' occurred in our definition, the term 'true in $\mathbf{L}_E$' had no application to the case in point. (Or we might say that 'Calvin Coolidge' did not belong to $\mathbf{L}_E$, as $\mathbf{L}_E$ was defined by us.)

It might be said that the omission of a proper name already in use by speakers of the English language would merely be a symptom of carelessness in the framing of our definition. And no doubt it would. But no matter what meticulous care were taken to obtain a "complete" inventory of primitive terms in the English language, *the resulting list would become obsolete every*

[17] This could be done in various ways: We might arrange for each undefined term in $\mathrm{L}_E$ to have a number correlated with it; or 'catcat' might be the name of 'cat', 'manman' of 'man', and so on; or the familiar device of quotation marks might be used. But although the names might be regularly formed in some such fashion, $\mathbf{M}_E$ could not contain a rule to determine that they *be* so formed. It must, for instance, be a kind of logical accident that the name of a word in $\mathrm{L}_E$ is obtained by inserting it between commas. No official notice could be taken of the structural relations between a word of $\mathrm{L}_E$ and its name in $\mathbf{M}_E$.

[18] Except in so far as $\mathrm{L}_E$ proved too "rich" for a definition of 'true in $\mathrm{L}_E$' to be possible. Cf. section 5 above.

*time a new name came into use*. Every time an infant was christened, or a manuscript received a title, the inventory and, consequently, the definition of truth depending upon that inventory, would become inaccurate. The " open " character of a natural language, as shown in the fluctuating composition of its vocabulary, defeats the attempt to apply a definition of truth based upon enumeration of simple instances. The attempt is as hopeless as would be that of setting out to define the notion of ' name ' by listing all the names that have ever been used.[19]

### 7. Further criticism of the semantic definition

Let us waive for the present the objections stated in the last section. The relativity to which I have drawn attention might, after all, prove unavoidable, so that ' truth ' would be a predicate whose definition would vary with the varying fortunes of the English language. And let it be supposed that a semantic definition of the proposed type had been offered of say ' true in the English language *as of January* 1, 1940 '.

To what extent could a competent reader of such a definition *understand* the term ' truth ' thereby defined? If he could follow the technicalities of the recursive definition supplied, he would certainly be in a position to eliminate the term ' true ' from any context in which it occurred. To this extent, then, he would be able to *use* the term correctly as intended, making the correct inferences from all asserted sentences in which it could occur. But he would surely be strongly inclined to say also something like " I understand the *principle* of the definition ". And we ourselves, to come closer home, seem to *understand* Tarski's procedure (in the fashion in which one may grasp the " point " of a mathematical proof without attending to all its details). We seem to see quite clearly that what Tarski is doing is so to define truth that *to assert that a sentence is true is logically equivalent to asserting that sentence*. And in so doing, we feel that we *understand* the definition, besides being able to apply it. But if we try to *say* what we think we understand, we sin at once against the canons of syntactical propriety. The phrase " to assert that a sentence is true is logically equivalent to asserting that sentence ",

[19] The reader may find it a useful exercise to show in detail why the use of general linguistic predicates in $M_E$, such as ' name ', merely leads back to the formulae $\Theta$ and **S** of section 3 above. It seems, indeed, that the extensional or enumerative character of the proposed definition is essential to it. And if this is so, we must either resign ourselves to the transitory and fluctuating nature of the " concept " of truth offered or look for some other way to define it. Since the paradoxical consequences result from the attempt to interpret ' truth ' as a property of linguistic objects (sentences), it might be worth while, after all, to try to formulate a " realist " alternative.

which is intuitively so clear, is in fact, a crude formulation in colloquial English of the inacceptable formula Θ of section 3.

Anybody who is offered a definition of 'true in the English language as of January 1, 1940' must, therefore, resolutely abstain from supposing that he "understands" the principle of the definition, in the sense of being able to give an explicit definition[20] of the concept defined. If he tries to give such a formulation, he will succeed only in talking nonsense (uttering a sentence which breaks the syntactic rules of the language to which it belongs).

It might be said, in answer to this, that too much is being demanded, by implication, of a recursive definition. After all, the operation of multiplication (of integers) is defined *recursively* in arithmetic, yet nobody could reasonably complain, *on this account*, that "the concept of multiplication" is not "understood". If we can use the multiplication sign correctly in all the contexts in which it occurs, so that we make no mistakes in calculation, we "understand" multiplication as well as it can be understood. The rest is psychology. Whether a mathematician has a subjective feeling of "grasp" or "insight" or "understanding" has nothing to do with the question of the logical adequacy of the mathematical definition.

This is all very well for the case of multiplication (and similar terms recursively defined in mathematics). Here 'multiplication' is defined, uniquely, *once and for all*,[21] and it is sufficient that we shall be able to *use* the sign of multiplication correctly in all its possible occurrences. But the case is different for 'truth'.

If we were to insist rigorously upon the absurdity of any attempt to generalise the definition of 'true in English as of Jan. 1, 1940,' we should have to insist also that the recursive definition had exclusive *application to the "language" in question.* To the request to find *another* definition of 'true in French' or even 'true in English as of Jan. 1, 1950', the response would have to be that we had not the least notion of how to begin.

[20] It is possible to give an *explicit* definition of semantic terms as of other terms introduced by recursive definition. But this involves the use of variables of higher types than those occurring in the original recursive definition and does not resolve our difficulty. On this point see *WFS*, 292 (f.n. 24).

[21] When the operation of multiplication is generalised to apply to an indefinite variety of number systems the case is altered.

It is as if I were to " define " the term ' telephone number in New York ' for a child by enumerating the telephone numbers of all those persons in New York who have telephone numbers. A moderately intelligent child would soon " spot " what I was doing. He might say " I understand : you always give the number which has been assigned by the telephone company ". But if I am to retort : " No, that has *nothing* to do with the case —attend to the definition ! " he would be helpless to extend the definition to other cases. If my admonition were intended seriously, no principle would have been given to determine the extension of the original definition : a " telephone number *in London* " might be a man's height, or his waist measurement, or *any* number associated with him.

Similarly, if we are to take the semantic definitions at their face value, we must suppose ' truth ' to have been defined *only* for the cases actually discussed, with no indication at all for extension to other languages. But to pretend that this is the case is self-deception. No account of the semantic approach to the definition of truth can be regarded as satisfactory which prevents us from saying what we undoubtedly understand from the exposition of the theory.[22]

It is worth noting that the formulation of a general criterion of truth is indispensable for a direct[23] solution of the " philosophical problem of truth ". For the philosopher who is puzzled by the nature of truth wants a satisfactory *general* description of usage. To be told that such and such are *instances* of truth will not serve to assuage his thirst for generality. A philosopher who is investigating " the nature " or " the essential nature " of man, will find little assistance in the information that all American citizens are men.

## 8. THE SEMANTIC DEFINITION CONTRIBUTES NOTHING TO THE " PHILOSOPHICAL PROBLEM OF TRUTH ".

The clinching argument for this conclusion is that adherents of the correspondence, the coherence, or the pragmatist, " theories " of truth will all indifferently accept the schema **S** of

[22] A general criterion of truth might perhaps be formulated in a meta-meta-language (cf. *WFS* 306, f.n. 38) but it remains to be shown that this can be done without reinstating the semantic paradoxes. There is a constant temptation in the formal study of semantics to relegate important questions to a " language " whose structure has not been studied.

[23] I mean an answer *to* the question asked by the philosopher—rather than an attempt to show that the question is illegitimate and should not be asked.

section 3 above. They would all be prepared to agree[24] that

'It is snowing today' is true $\equiv$ It is snowing,

'London is a city' is true $\equiv$ London is a city,

AND SO ON.

And insofar as the semantic definition of truth has such consequences as these *and no others*, the philosophical dispute stays unsettled.[25] The philosophical disputants are concerned about what *in general* entitles us to say "It is snowing" or "London is a city" *and so on*. In other words, they are searching for a general property of the designata of true object-sentences. To this inquiry, the semantic definition of truth makes no contribution.

Nevertheless, the semantic definition does suggest another *philosophical* theory of truth (though one which few philosophers would find attractive). The central idea of this adaptation consists in introducing the term 'true' into *the object language*, by means of recursive definitions paralleling those of Tarski.[26]

We might indeed stipulate :

(1) (s)(that s is true $=_{\mathrm{Df}}$ s),[27]

(2) (s)[that $\sim$s is true $=_{\mathrm{Df}}$ $\sim$(that s is true)],

(3) (s) (t) [that (s & t) is true] $=_{\mathrm{Df}}$ [(that s is true) & (that t is true)].

Further clauses of the recursive type might be added, as needed.

On this view, the locution 'that . . . is true' would be regarded as a linguistic device for converting an unasserted into an asserted sentence.[28] Truth would then tend to lose some of its present dignity. One might be inclined to call the word 'true' redundant, and to baptize the theory, in the customary misleading fashion, as a "No Truth" theory. Such consequences ought

[24] Subject to certain possible qualifications, however. On certain "realist" theories of truth, it might be held that the truth of a proposition does not presuppose the existence of a sentence expressing that proposition. On this view, the sign of logical equivalence should be replaced by that of one-way entailment.

[25] I cannot accept Tarski's claim that his definition favours the "classical Aristotelian conception of truth". I regard his view as neutral to this and all other *philosophical* theories of truth.

[26] Cf. Carnap's discussion of his "absolute" notion of truth, *Introduction to Semantics*, 90.

[27] Notice that the word 'true' is here attached to a sentence, not to the name of a sentence. Thus truth must now be a property of what is designated by a sentence (perhaps a proposition?), not a property of a sentence.

[28] So that 'true' would be an "incomplete symbol" forming a part of the "signpost", '⊢', of Frege or Whitehead and Russell?

not to abash us, however. For *any* defined term can be viewed as redundant, if we are prepared to suffer the practical inconvenience of dispensing with its use.[29]

We need not be afraid, either, that the proposed notion of truth would allow the reappearance of the semantical paradoxes. For we can continue to " stratify " (separate into semantic types) all terms having linguistic reference in our language. And this is enough to remove the known paradoxes.[30]

More serious is the objection that this proposal would make no provision for such expressions as " *The truth* is hard to discover ", or others in which reference to truth or falsity is made by means of *substantives*. But in this respect the proposed theory is in no worse case than that of Tarski ; and it may claim to be at least as close to common usage.

Yet I am not seriously backing a " No Truth " theory against its more orthodox competitors. My own view is that any search for a *direct* answer to the " philosophical problem of truth " can at best produce a formula that is platitudinous and tautological or arbitrary and paradoxical: and that a more hopeful method for investigating the " problem " is to dispel the confusions of thought which generate it. But this is hardly the place to elaborate upon that theme.

## 9. Summary

I have illustrated the semantic method for defining ' truth ', using for this purpose a simplified, " model ", language. The occurrence in " ordinary language " of semantical paradoxes was seen to make imperative a distinction between " object-language " and " meta-language ". This, in turn, suggested a leading notion of Tarski's method, viz. that of treating ' true ' as a predicate of object-*sentences*, definable in an appropriate *meta*-language. Examination of the steps needed to adapt the procedure to " ordinary English " brought paradoxical consequences to light. For the definition would become obsolete whenever new names were introduced into the language ; and the " point " or principle of the definition could be " seen " but apparently not *stated* without inconsistency. The semantic definition can therefore not be regarded as a satisfactory " philo-

[29] Cf. Tarski's answer to a similar objection, *SCT*, 358–9.

[30] An unsupported assertion of this sort is not worth much. But I believe it would not be hard to show the consistency of the proposed rules for the use of ' true '.

sophical reconstruction" of preanalytic usage. Indeed, the neutrality of Tarski's definition with respect to the competing philosophical theories of truth is sufficient to demonstrate its lack of *philosophical* relevance. His exposition does however suggest a "No Truth" theory, which was outlined; but neither this, nor any formal definition of truth, goes to the heart of the difficulties which are at the root of the so-called philosophical problem of truth.

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# TENTH INTERNATIONAL CONGRESS OF PHILOSOPHY

The Tenth International Congress of Philosophy will be held at Amsterdam from 11th August to 18th August, 1948. The central theme of the Congress is " Man, Mankind and Humanity ". This theme will be discussed at the Plenary Sessions of the Congress, and there will be a number of Sections dealing with the main theme and with the following subjects.

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